

Ontology Translation Protocol (Ontrapro)

Automated Ontology Alignment



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Ontrapro



- Semantic integration is needed when different information systems have different formal descriptions of the same type of data
- E.g., Inter-agency intelligence data sharing, joint sensor surveillance, multinational command and control
- Semantic Integration is also a key challenge of the Semantic Web

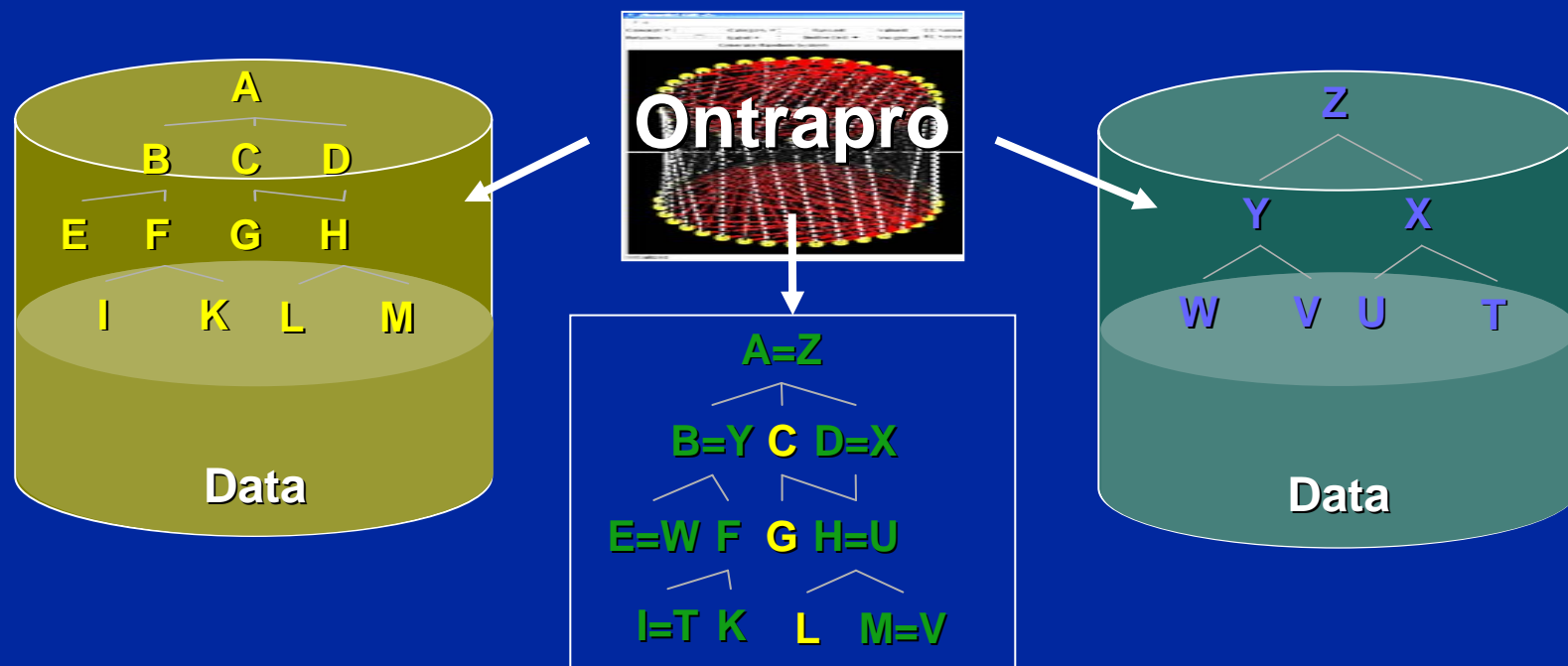


Ontrapro

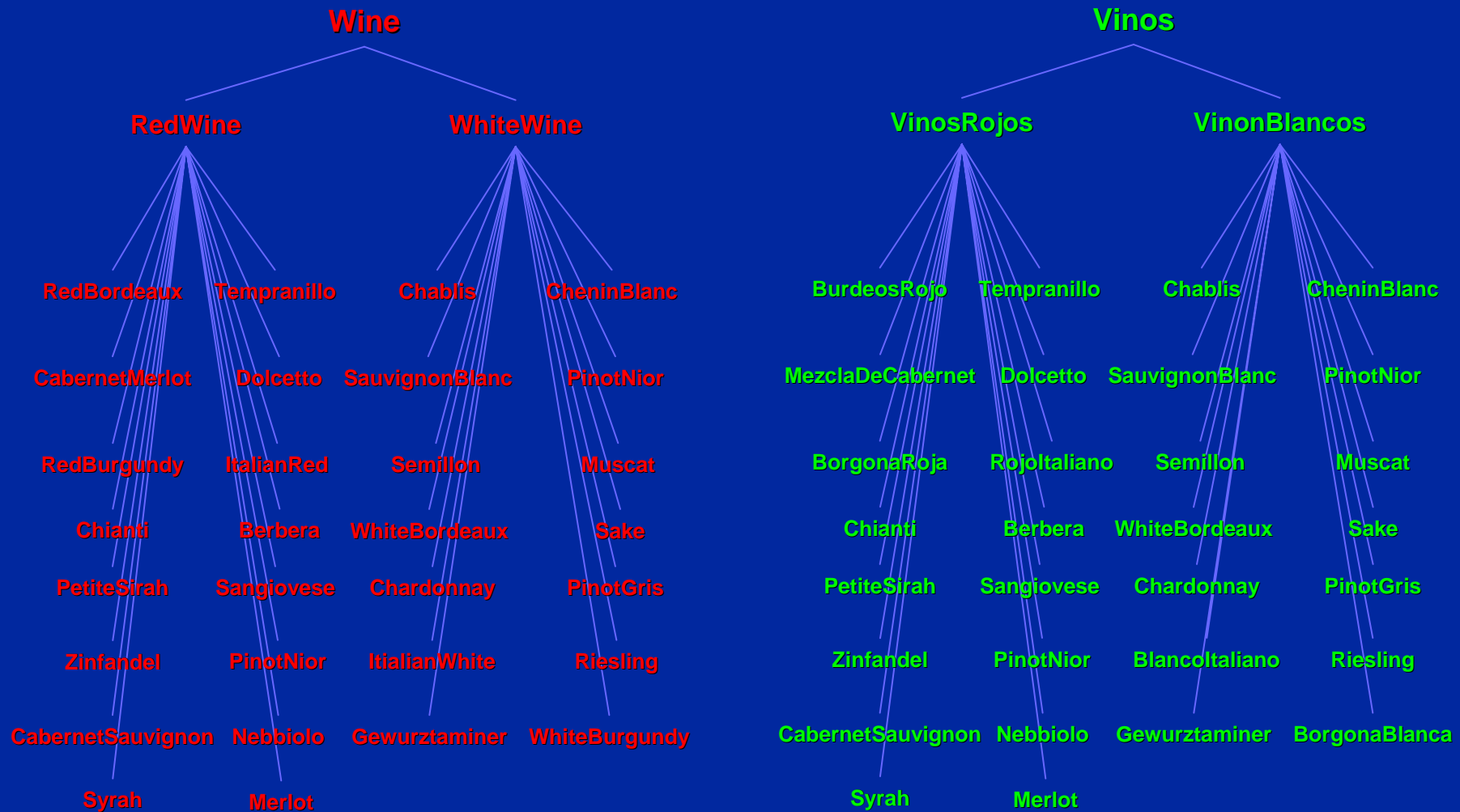


- **Our approach is to develop and/or integrate a suite of best-of-breed aligner algorithms**

- Ontrapro seeks to automate the process of aligning the data descriptions of *fielded* information resources
- Ontrapro discovers semantic correspondences between the elements of ontologies and schemas

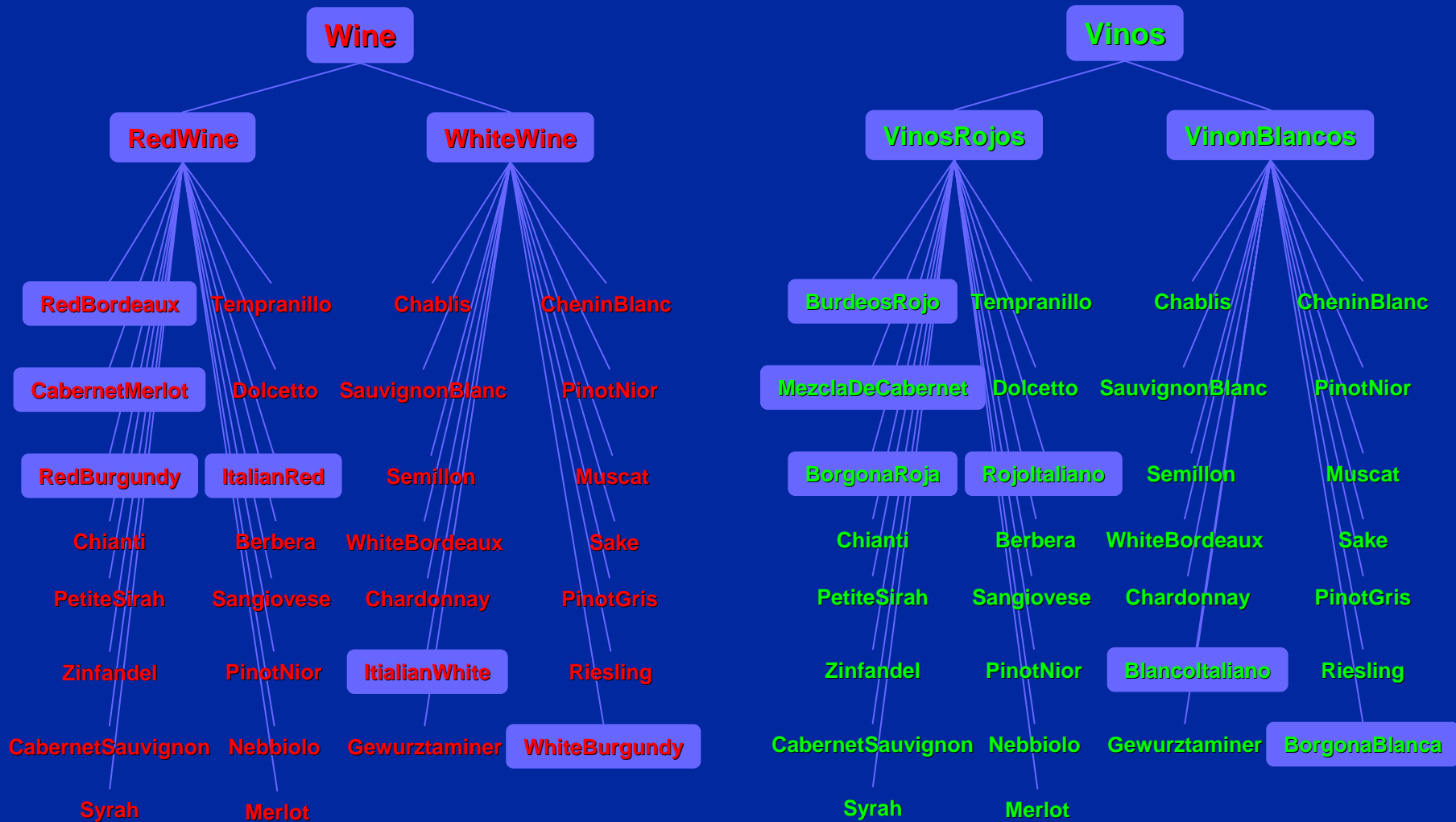


Example: Wine Ontologies



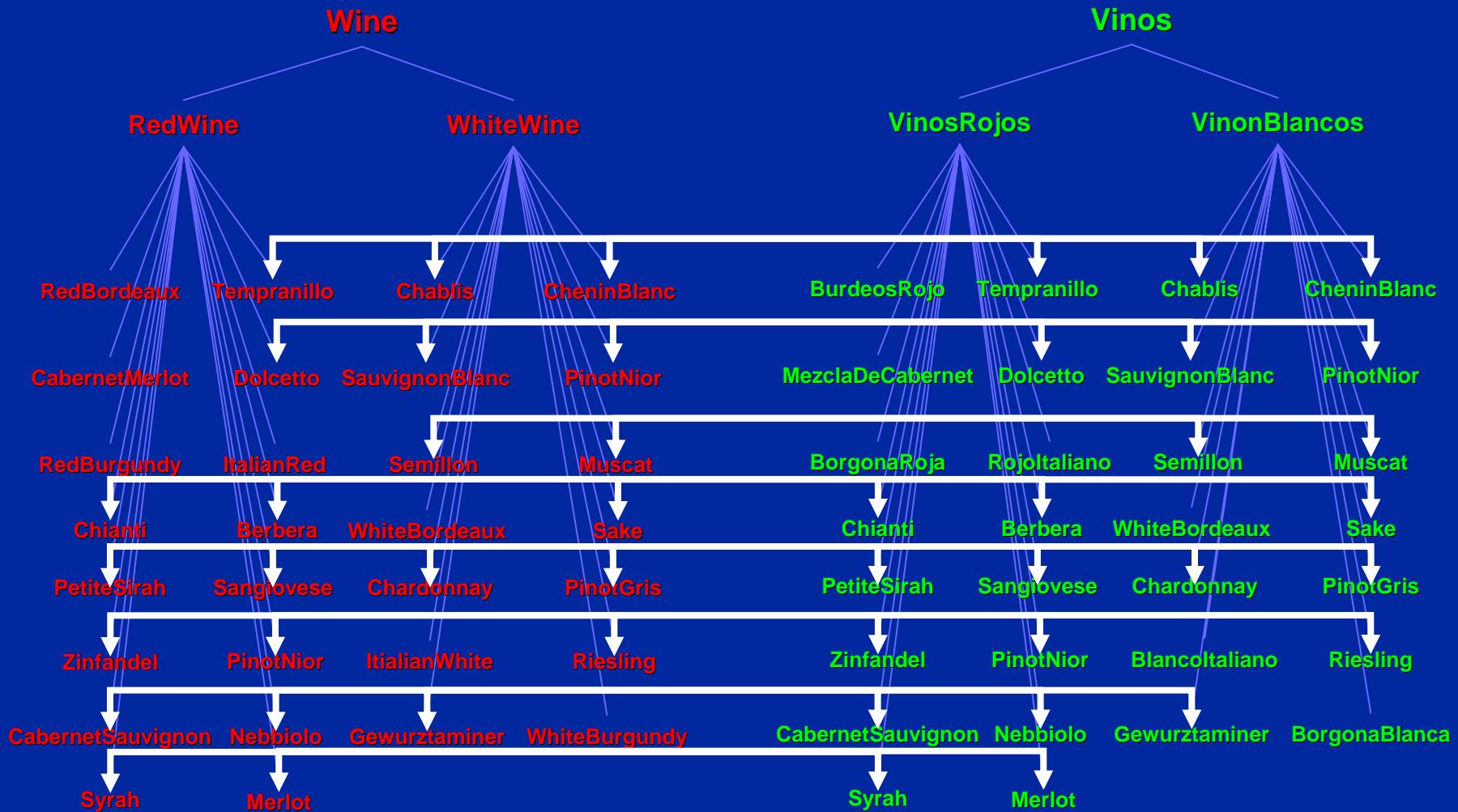
Example: Wine Ontologies

Term Dissimilarities



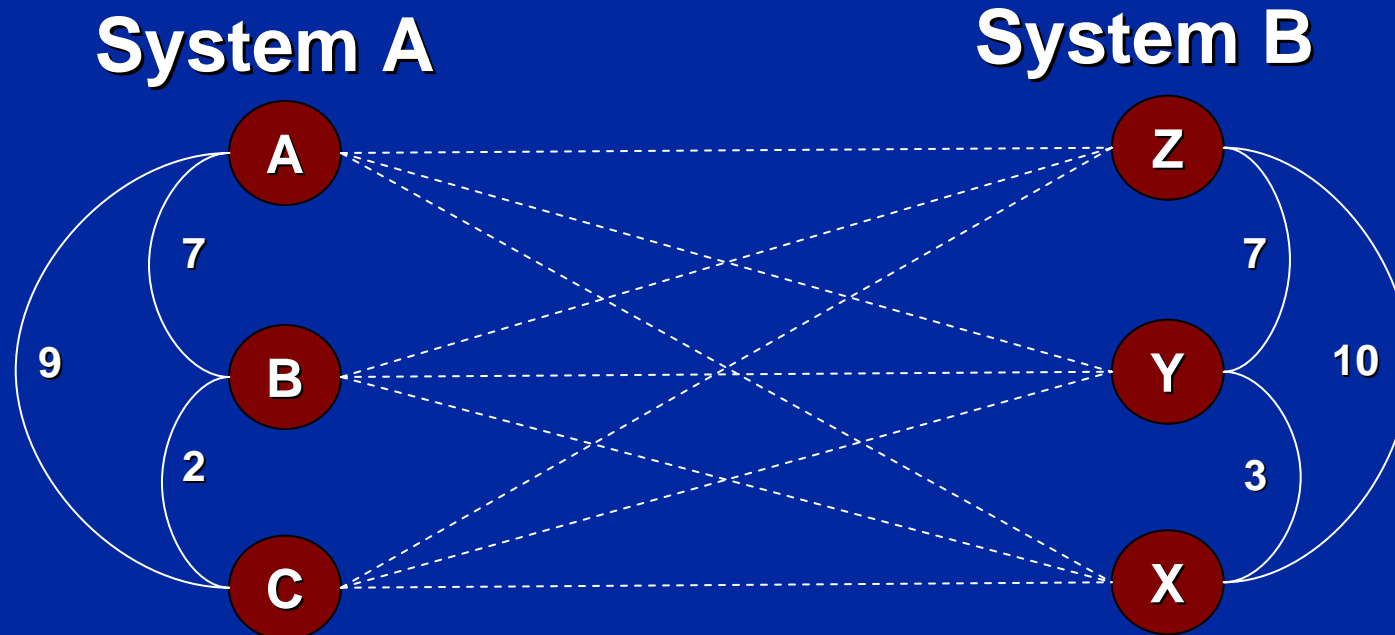
Example: Wine Ontologies

Edit Distance Mapping



Example: Wine Ontologies

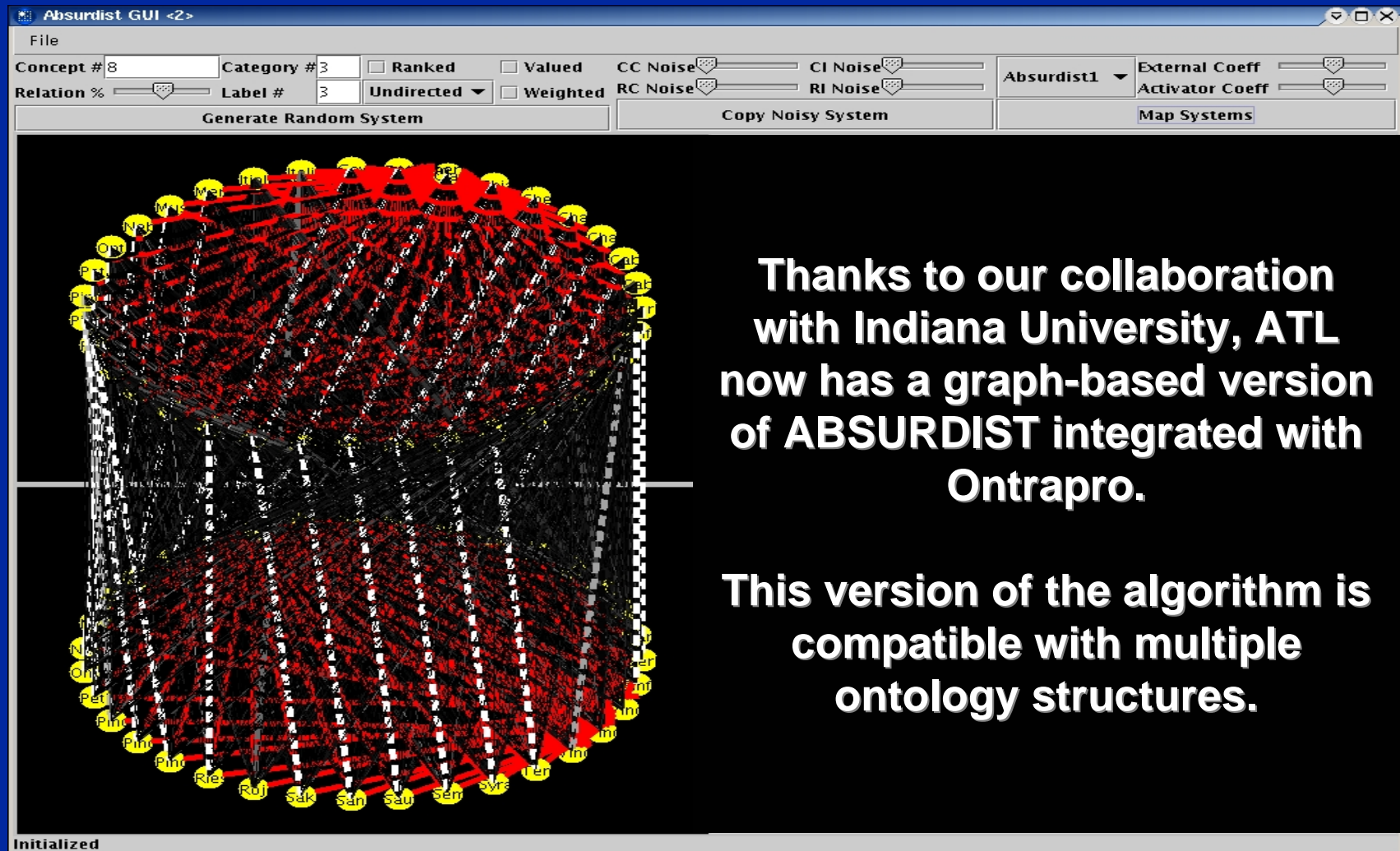
Structure Mapping



Original ABSURDIST (Aligning Between Systems Using Relations Derived Inside Systems for Translation)
algorithm generates a list of term correspondences by iterating through similarity distances between systems.

Example: Wine Ontologies

Structure Mapping

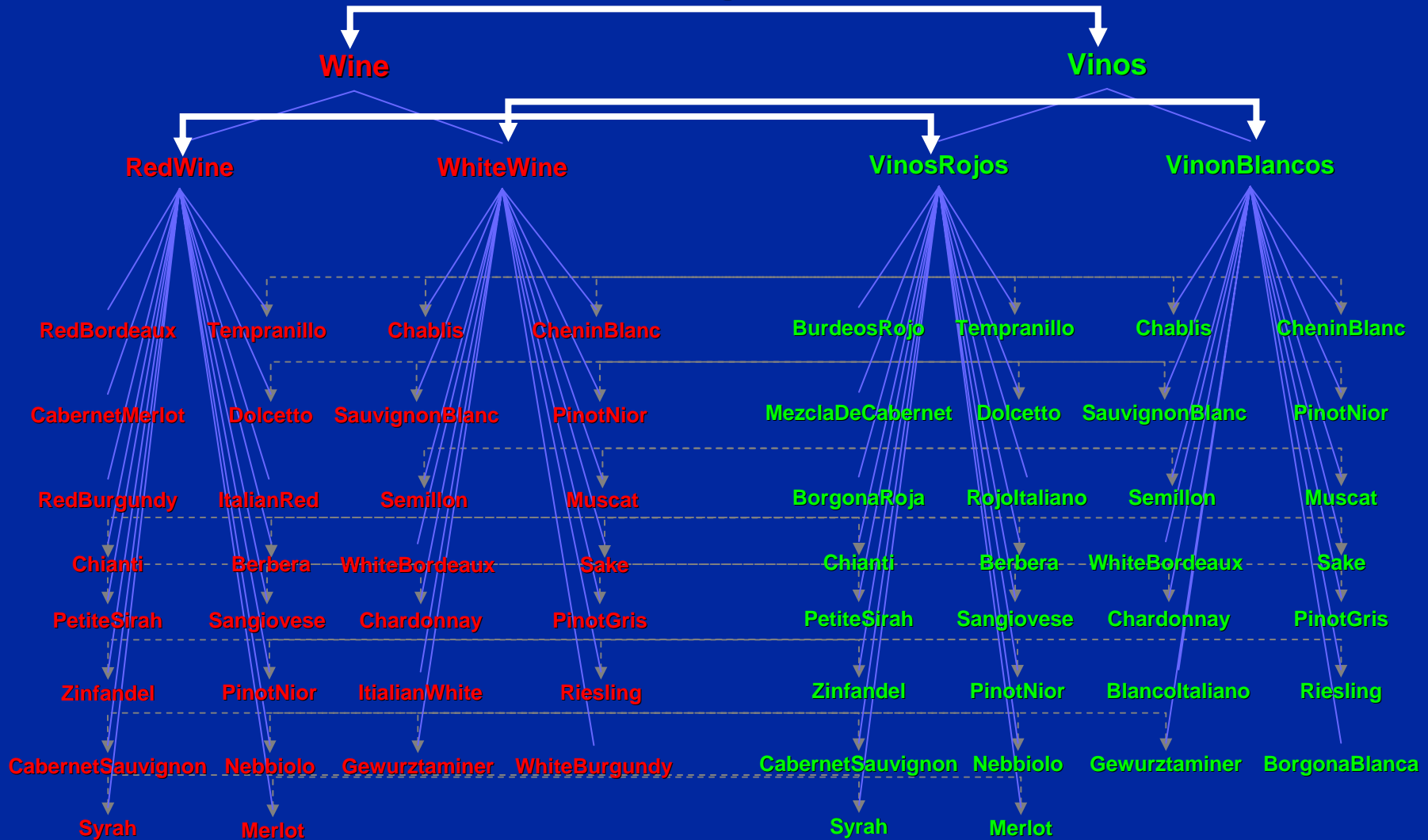


Thanks to our collaboration with Indiana University, ATL now has a graph-based version of ABSURDIST integrated with Ontrapro.

This version of the algorithm is compatible with multiple ontology structures.

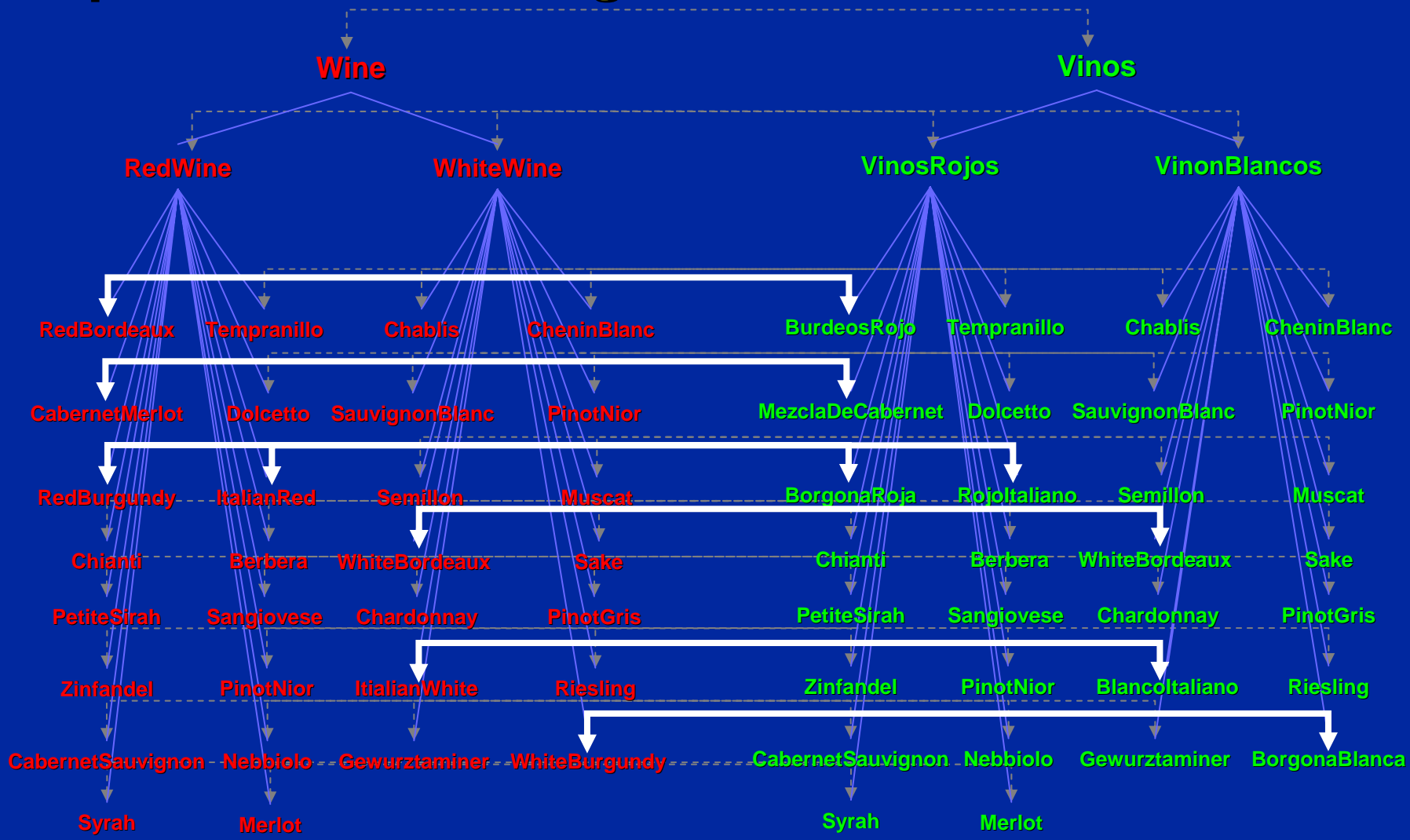
Example: Wine Ontologies

...plus structure mapping



Example: Wine Ontologies

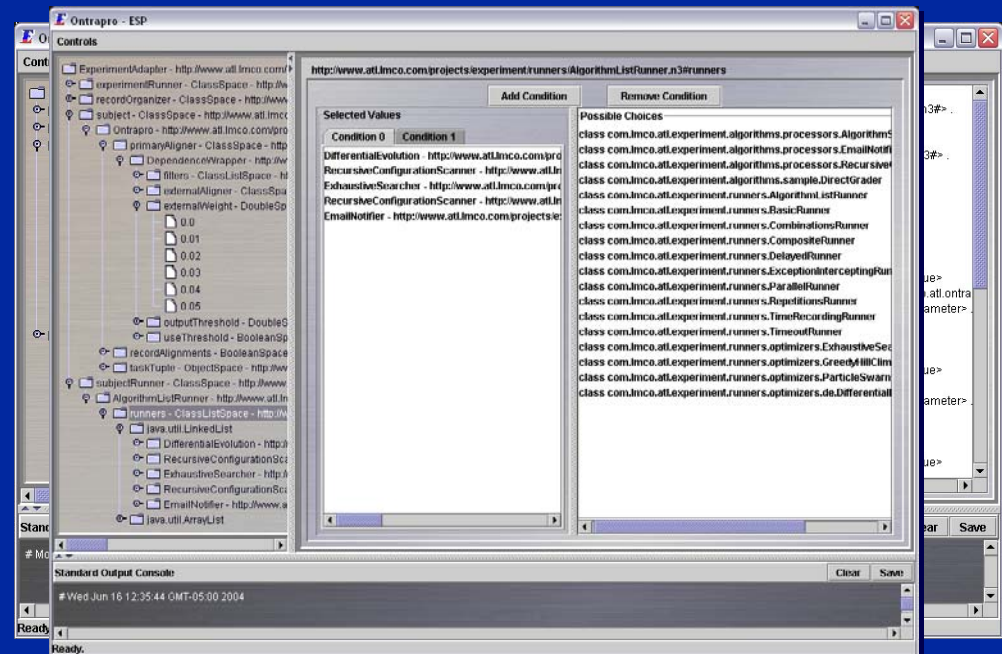
...plus stable marriage



Experiment Set Platform



- **ATL has developed a platform for**
 - Semi-automating experiment setup
 - Automating experiment execution
 - Automating data collection
 - *Used to grade alignments*
- **Employs a core set of ontologies**
 - General Experiment
 - Ontology Alignment
 - Alignment Evaluation
 - Ontology Operation
 - Operation Evaluation



<http://cvs.sourceforge.net/viewcvs.py/ontology/>

Ontrapro

Software and Tools



- **Developed for Ontrapro**

- ABSURDIST
- Various aligners and filters
- Experiment tools
 - **E.g., AlignmentGrader, CombinationsRunner**
- Query tools
- Integration framework

- **Adopted for Ontrapro**

- Jena
- Similarity Flooding
- TreeJuxtaposer
- KavaChart
- IsaViz



Ontology Alignment Source

<http://www.atl.external.lmco.com/projects/ontology>

